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None

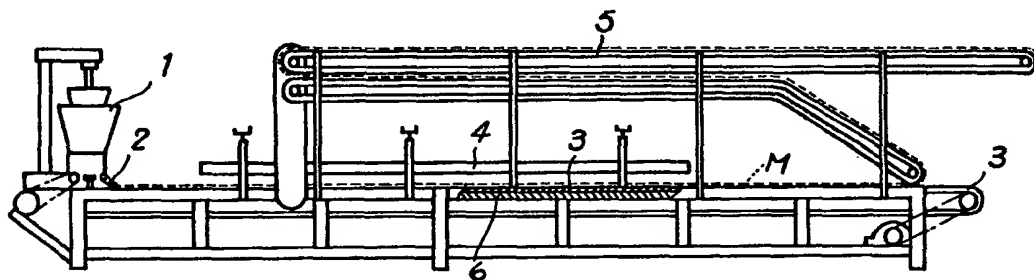
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A2B

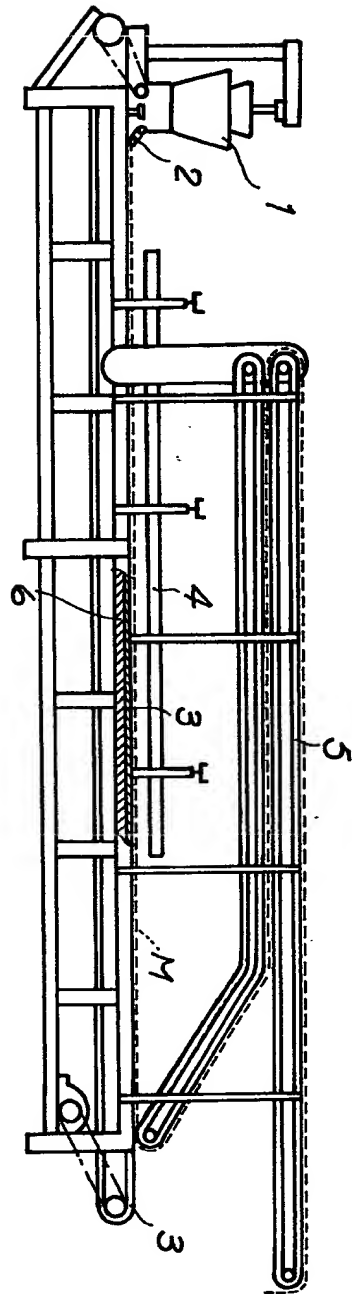
Selected US specifications from IPC sub-class A23L

(54) **Preparation of fish-noodles**

(57) A mashed fish-containing material is extruded as a sheet by suitable die (2) and heated in a steam oven and/or infrared oven (6). The sheet-like material (M) after heating (4,6) is cooled at (5) and then cut into thin strips of a suitable length to be separated and form noodles.



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## SPECIFICATION

**A method for the preparation of fish-noodles**

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This invention relates to a method of preparation of fish-noodles that is to say of noodles composed of a mixture of fish meat and noodles material. Fish meat (or fish flesh) is

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herein referred to as "fish".  
Known methods of preparation of fish-noodles, a conventional processed form of fish, have been carried out with the following steps:-

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(1) Mashed materials are put into a cylindrical or rectangular vessel.

(2) A plate provided with a plurality of holes of equal sizes, according to the desired size of the product, is located at the base of the vessel.

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(3) Pressure is applied to the vessel mechanically or manually so as to push the material through the holes into boiling water or saline hot water.

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(4) The product is boiled until cooked and then washed with water while cooling.

However, since the mashed materials are boiled some of the mashed material becomes dissolved, with loss of flavor. Further, in order to extrude the mashed materials from the vessel, the length of the product noodles can only be at maximum equal to that of the vessel. Thus, for uniform length, the noodles must be even shorter than this. Furthermore, extrusion is non-uniform and gives a variable product. Also, since extrusion under pressure can only be repeated after re-filling the vessel, continuous production and consequent high throughput is impossible.

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This invention sets out to provide a more suitable method of preparation for noodles rendering them easier to eat, which gives elongate noodles of uniform structure, thin in relation to their length.

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In one aspect the invention consists in a method for the preparation of fish-noodles comprising the steps of: extruding from a slit die a continuous sheet of mashed and boiled fish material; heating the continuous sheet with live steam and/or infrared heating; cooling the continuous sheet; and cutting the cooled sheet into thin parallel noodles of desired length.

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Cutting is usually effected in a direction transverse to that of sheet movement. The final product is usually washed and packed for sale.

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The boiled fish material may contain additives such as sugar, egg white, mirin (sweet Japanese Sake), starch as well as mashed fish and a salt used for gel formation.

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Fish is used after removing uneatable portions (such as bones, internal organs and the like) from the fish, mashing and adding said salt and any additives as above during such

mashing. Gel formation takes place as the fish is mashed.

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The extruded sheet is of such thickness as may be desired for organoleptic considerations and for subsequent processing. A generally suitable range is from 1 to 3 mm in thickness.

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The sheet shape material is then heated e.g. at 60° to 80° to kill any bacteria and inactivate any enzymes present. A steam oven and/or (for particularly uniform heating) infrared heaters may be used. Since the material is in the form of a sheet during heating the heat is effectively transmitted from the surface to the inner portions thereof. Thus, both the inner portions and the surface portions are converted to a uniform "crisp condition". Also, heating time can be reduced because only a thin sheet is heated. This increases the overall productivity.

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The sheet material, converted to a solid gel by the heating, is then cooled down. The cooling may be carried out either in air or under refrigeration and is typically continued until the inner portions of the sheet material reach room temperature or below. Once again, because the material is a thin sheet, processing time i.e. cooling time, is greatly reduced.

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After cooling, the sheet material is cut into thin parallel strands which are then cut to a suitable length. The cut materials are typically 0.5 to 1.5mm in width and for example 10cm in length.

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Washing is carried out by putting the fibrous body into saline water with stirring, to remove the slippery coating on the surface of the fibrous body. The product becomes more lustrous, giving visual appeal to the prospective consumer.

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The fibrous body thus prepared can be packed in unit amounts per pack. It can be eaten as noodles, or as part of a pickled or vinegared dish, or from a soup bowl.

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The invention will be further described with reference to the accompanying single Figure of drawing, which is a generalised diagrammatic side view of continuous production equipment for thin noodles and especially fish-noodles.

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The continuous production equipment comprises a forming machine (or extruder) 1 from a slit die 2 of which sheet-like material M is extruded. The sheet-like material is transferred (towards the right in the drawing) by a conveyor 3, and subjected to heat treatment during such conveyance. For this purpose infrared elements 6 are provided beneath conveyor 3 at a suitable spacing. A steam tube 4 blows live steam on the sheet-like material M on the plate conveyor 3. The sheet-like material M on plate conveyor 3 is accordingly heated.

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Cooling is effected during conveyance of the sheet-like material M upon a second conveyor 5 which operates above the plate conveyor 3. At the end portion of the second plate conveyor 5, a cutter (not shown) is provided, to cut the sheet-like material into very narrow

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strips.

Since the fish-containing material is formed like a sheet and the heating is performed in the manner illustrated, a uniform crisp texture and taste is obtained, and a good gel-shape material.

#### CLAIMS

1. A method for the preparation of fish-noodles comprising the steps of: extruding from a slit die a continuous sheet of mashed and boiled fish material; heating the continuous sheet with live steam and/or infrared heating; cooling the continuous sheet; and cutting the cooled sheet into thin parallel noodles of desired length.
2. A method as claimed in claim 1 in which cutting is effected in a direction transverse to that of the direction of travel.
3. A method as claimed in claim 1 or 2 in which the product is subsequently washed and packed for sale.
4. A method as claimed in claim 1, 2 or 3 in which the boiled fish material contains sugar, eggwhite, mirin, and/or starch.
5. A method as claimed in any one preceding claim in which the extruded sheet is from 1 to 3mm thick.
6. A method as claimed in any one preceding claim in which heating is effected at 60° to 80°C.
7. A method as claimed in any one preceding claim in which cooling is effected under refrigeration.
8. A method as claimed in any one preceding claim in which the cut noodles are 0.5 to 1.5mm in thickness.
9. A method as claimed in claim 1 and substantially as herein described with reference to the accompanying drawings.
10. Fish-noodles prepared by the method claimed in any of claims 1 to 9.